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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/572,504

03/17/2006

Takeshi Hara

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EXAMINER

LOUIE, WAE LENNY

ART UNIT

PAPER NUMBER

3661

MAIL DATE

DELIVERY MODE

04/16/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/572,504	Applicant(s) HARA ET AL.	
	Examiner WAE LOUIE	Art Unit 3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Striker (6,326,780).

Regarding applicant claim 1, Striker discloses sensor that detects a rotational angle comprising: a sensor wheel (sensor assembly 18) operating simultaneously with rotation of a steering shaft; an absolute angle calculating means for calculating an absolute steering angle based on a steering angle signal from the sensor wheel (col. 3, line 55-col. 4, line 7); wherein the sensor wheel includes a GMR element (22) and a magnetizing portion arranged around the GMR element (concentrators 30), and wherein the rotational angle is detected by making two turns of the steering shaft as one cycle of the steering angle signal based on a change in resistance value of the GMR element obtained by changing a magnetic field direction according to rotation of the magnetizing portion (col. 3, lines 33-54, "parallel magnetic field is introduced across the sensor assembly"). Striker states in the background that the these types of sensors can be used, for example as throttle position sensors, fuel accumulators, transmission position sensors, steering angle sensors, and gear tooth sensors (col.1, lines 18-22). Although Striker's magnetic field concentrator array for rotary position sensors do not specifically

Art Unit: 3661

mention use with a steering shaft, it would have been obvious to one of ordinary skill in the art to combine the sensor as disclosed by Striker and the motivation taught by Striker to sense the steering angle given its minimal need for calibration, small size, cost effectiveness and reliability (col.1, line 26-29).

Regarding applicant claims 3-4, Striker discloses a turning direction determining means for determining a turning direction; a middle point specific value detecting means for storing a position of a middle point of the steering shaft and detecting a predetermined value near the middle point so as to calculate the absolute angle based on the predetermined value (col. 3, line 55-col. 4, line 7, "With the configuration of the concentrators in this sensor assembly, will be subjected to magnetic field strengths that vary approximately as the sine of the angle between the field direction and the radial centerline of the particular element.")

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Striker (6,326,780) in view of Schmollngruber et al (2004/0046624).

Regarding applicant claim 2, Striker discloses the sensor but is silent concerning GMR element is composed of two GMR bridge circuits and is arranged so that phases of output signals from the GMR bridge circuits shift by 90 degrees. Schmollngruber et al teaches implementing a gradiometer in the form of a Wheatstone bridge is advantageous in that direction and strength of the internal bias field is uniformly selectable for all parts of the bridge. It is not necessary to utilize thin layer hard magnets having different coercivities for example [0015-0016]. It would have been obvious to one of ordinary skill in the art to utilize the teaching of Schmollngruber in

Art Unit: 3661

implementing a GMR bridge circuit to maintain an internal bias field that is uniformly selectable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WAE LOUIE whose telephone number is (571)272-5195. The examiner can normally be reached on M-F 0700-1530.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wae Lenny Louie/
Examiner, Art Unit 3661

/Thomas G. Black/
Supervisory Patent Examiner, Art Unit 3661